BASIC Stamp® Manual

Version 1.8

PARALLAX

Introduction

Thank you for purchasing a BASIC Stamp product. We've been making BASIC Stamp computers for years, and most customers find them useful and fun. Of course, we hope your experience with BASIC Stamps will be useful and fun, as well. If you have any questions or need technical assistance, please don't hesitate to contact Parallax or the distributor from which you purchased your BASIC Stamps.

This manual is divided into two sections. The first section deals with the BASIC Stamp I, and the second section deals with the BASIC Stamp II. The BASIC Stamp I has been around for some time, and therefore has more data in the way of application notes. If you have prior experience with BASIC Stamp I, you should consult Appendix C, for details on converting to the Basic Stamp II.

PBASIC Language: the BASIC Stamps are programmed in a simple version of the BASIC language, called *PBASIC*. We developed PBASIC to be easy to understand, yet well-suited for the many control and monitoring applications that BASIC Stamps are used in. The PBASIC language includes familiar instructions, such as GOTO, FOR...NEXT, and IF...THEN, as well as specialized instructions, such as SERIN, PWM, BUTTON, COUNT, and DTMFOUT.

Hardware: the BASIC Stamps discussed in this manual are the "BS1-IC" and "BS2-IC." Both represent the latest versions of the BASIC Stamp I and BASIC Stamp II. Both include a small circuit board with a PBASIC interpreter chip, EEPROM, 5-volt regulator, reset circuit, and resonator. These five components form a complete computer in a very small space. The modular design of the BS1-IC and BS2-IC makes them perfect for use in breadboards and printed circuit boards.

Each of the BASIC Stamp modules has a corresponding "carrier board." The carrier boards provide 9-volt battery clips, connectors for programming, and a small prototyping area. Although they are optional, we recommend that you purchase at least one carrier board as a means of easily programming your BASIC Stamps.

Important Information

Warranty

Parallax warrants its products against defects in materials and workmanship for a period of 90 days. If you discover a defect, Parallax will, at its option, repair, replace, or refund the purchase price. Simply return the product with a description of the problem and a copy of your invoice (if you do not have your invoice, please include your name and telephone number). We will return your product, or its replacement, using the same shipping method used to ship the product to Parallax (for instance, if you ship your product via overnight express, we will do the same).

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BBS/Internet Access

We maintain BBS and Internet systems for your convenience. These may be used to obtain software, communicate with members of Parallax, and communicate with other customers. Access information is shown below:

E-mail:	info@parallaxinc.com
Ftp:	ftp.parallaxinc.com (same file selection as BBS)
Web:	http://www.parallaxinc.com
BBS:	(916) 624-7101 (300-14400 baud, 8 data bits, 1 stop bit, no parity)

Internet BASIC Stamp Discussion List

We maintain an email discussion list for people interested in BASIC Stamps. The list works like this: lots of people subscribe to the list, and then all questions and answers to the list are distributed to all subscribers. It's a fun, fast, and free way to discuss issues.

To subscribe to the Stamp list, send email to ***majordomo@parallaxinc.com*** and write ***subscribe stamps*** in the body of the message.

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System Requirements

To program the BASIC Stamp I, you'll need the following computer system:

- IBM PC or compatible computer
- 3.5-inch disk drive
- Parallel port
- 128K of RAM
- MS-DOS 2.0 or greater

If you have the BASIC Stamp I carrier board, you can use a 9-volt battery as a convenient means to power the BASIC Stamp. You can also use a 5-15 volt power supply (5-40 volts on the BS1-IC rev. b), but you should be careful to connect the supply to the appropriate part of the BASIC Stamp. A 5-volt supply should be connected directly to the +5V pin, but a higher voltage should be connected to the PWR pin.

Connecting a high voltage supply (greater than 6 volts) to the 5-volt pin can permanently damage the BASIC Stamp.

Packing List

If you purchased the BASIC Stamp Programming Package, you should have received the following items:

- BASIC Stamp manual (this manual)
- BASIC Stamp I programming cable (parallel port DB25-to-3 pin)
- BASIC Stamp II programming cable (serial port DB9-to-DB9)
- 3.5-inch diskette

If you purchased the BASIC Stamp II Starter Kit, you should have received the following items:

- BASIC Stamp Manual (this manual)
- BASIC Stamp II programming cable (serial port DB9-to-DB9)
- 3.5-inch diskette

If any items are missing, please let us know.

Connecting to the PC

To program a BASIC Stamp I, you'll need to connect it to your PC and then run the editor/downloader software. In this section of the manual, it's assumed that your BASIC Stamp is a BS1-IC, and that you have the corresponding carrier board.

To connect the BASIC Stamp to your PC, follow these steps:

1) Plug the BS1-IC onto the carrier board. The BS1-IC plugs into a 14-pin SIP socket, located near the battery clips on the carrier. When plugged onto the carrier board, the components on the BS1-IC should face the battery clips.

2) In the BASIC Stamp Programming Package, you received a cable to connect the BASIC Stamp to your PC. The cable has two ends, one with a DB25 connector and the other with a 3-pin connector. Plug the DB25 end into an available **parallel** port on your PC.

3) Plug the remaining end of the cable onto the 3-pin header on the carrier board. On the board and the cable, you'll notice a double-arrow marking; the markings on the cable and board should match up.

4) Supply power to the carrier board, either by connecting a 9-volt battery or by providing an external power source.

With the BASIC Stamp connected and powered, run the editor/downloader software as described later in this manual.

System Requirements

To program the BASIC Stamp II, you'll need the following computer system:

- IBM PC or compatible computer
- 3.5-inch disk drive
- Serial port
- 128K of RAM
- MS-DOS 2.0 or greater

If you have the BASIC Stamp II carrier board, you can use a 9-volt battery as a convenient means to power the BASIC Stamp. You can also use a 5-15 (5-40 volts on BS2-IC rev. d) volt power supply, but you should be careful to connect the supply to the appropriate part of the BASIC Stamp. A 5-volt supply should be connected directly to the +5V pin, but a higher voltage should be connected to the PWR pin.

Connecting a high voltage supply (greater than 6 volts) to the 5-volt pin can permanently damage the BASIC Stamp.

Packing List

If you purchased the BASIC Stamp Programming Package, you should have received the following items:

- BASIC Stamp Programming Manual (this manual)
- BASIC Stamp I programming cable (parallel port DB25-to-3 pin)
- BASIC Stamp II programming cable (serial port DB9-to-DB9)
- BASIC Stamp I and BASIC Stamp II schematics
- 3.5-inch diskette

If any items are missing, please let us know.

Connecting to the PC

To program a BASIC Stamp II, you'll need to connect it to your PC and then run the editor software. In this section, it's assumed that you have a BS2-IC and its corresponding carrier board (shown below).

To connect the BASIC Stamp II to your PC, follow these steps:

1) Plug the BS2-IC onto the carrier board. The BS2-IC plugs into a 24-pin DIP socket, located in the center of the carrier. When plugged onto the carrier board, the words "Parallax BS2-IC" should be near the reset button.

2) In the BASIC Stamp Programming Package, you received a serial cable to connect the BASIC Stamp II to your PC. Plug the female end into an available serial port on your PC.

3) Plug the male end of the serial cable into the carrier board's serial port.

4) Supply power to the carrier board, either by connecting a 9-volt battery or by providing an external power source.